First-come, First-serve: marker-sensitive blocking

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WSCLA 16, Amherst

February 11-13, 2011

Potawatomi Affix Order

(Hockett 1939+1948, Anderson 1992, Halle&Marantz 1993, Steele 1995, Wunderlich 1996, Stump 2001)

(1) *Extract of the transitive animate paradigm*

A\P	2s	2p	3s	3p
2s			Σ-a	Σ-a-k
2p			Σ-a-wa	Σ-a-wa-k
3s	Σ-uko	Σ-uko-wa		
3p	Σ-uko-k	Σ-uko-wa-k		

case ≫ 1 ≫ 2 ≫ 3

(2) *Marker specifications*

–uko	Nom, 3	*–a*	Acc, 3
–wa	2p	*–k*	3p

Distributed Morphology (Halle & Marantz 1993)

- Vocabulary Items (VIs) are inserted to **realize** the morphosyntactic features the syntax provides
- VIs can be **underspecified** and are inserted if their features are a proper **subset** of the morphosyntactic feature context (Halle 1997)
- if more than one VI matches a context, the more **specific** marker is chosen

Specificity

- if more than one VI matches a context, the more **specific** marker is chosen
- hierarchy-effects result if specificity refers not only to the number of features a marker realizes, but to the **quality of the features**

(3) *Specificity* Müller (2005)

A vocabulary item V_i is more specific than a vocabulary item V_j iff there is a class of features F such that a. and b. hold.

a. V_i bears more features belonging to F than V_j does.
b. There is no higher-ranked class of features F' such that V_i and V_j have a different number of features in F'.

Fission as Feature Discharge (Noyer 1997)

- a marker is inserted and its substantial features are discharged and become **inaccessible** for any further insertion
- this allows insertion of more than one marker into one head: **'insertion as long as possible'**
- insertion process stops when there are no features left or no VIs which match

Example: Potawatomi

case ≫ 1 ≫ 2 ≫ 3

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context:	possible VIs:	the most specific one:
$\left[\begin{array}{l} \cancel{\text{A}},\cancel{-1},\cancel{-2},+3,+\text{pl} \\ \text{P},-1,+2,-3,+\text{pl} \end{array}\right]$	*-wa* ↔ [+2,+pl] *-uko* ↔ [A,−1,−2] *-k* ↔ [+3,+pl]	*-uko* ↔ [A,−1,−2]

Example: Potawatomi

...the insertion continues...

$$\begin{bmatrix} \text{A},-1,-2,+3,+\text{pl} \\ \text{P},-1,+2,-3,\cancel{+\text{pl}} \end{bmatrix} \qquad -wa \leftrightarrow [+2,+\text{pl}] \qquad \text{/–uko/}$$

$$\begin{bmatrix} \text{A},-1,-2,\cancel{+3},\cancel{+\text{pl}} \\ \text{P},-1,+2,-3,+\text{pl} \end{bmatrix} \qquad -k \leftrightarrow [+3,+\text{pl}] \qquad \text{/–uko–wa/}$$

$$\begin{bmatrix} \text{A},-1,-2,+3,+\text{pl} \\ \text{P},-1,+2,-3,+\text{pl} \end{bmatrix} \qquad \textbf{/–uko–wa–k/}$$

Blocking of expected markers

(4) *More Potawatomi verbal agreement* (Hockett 1939)

	1pe	1pi	2p	3p	obv	−anim
1p			−men* **−m**	−men* **−k**	−men* **−n_1**	−men* **−n_2**
2p	−men* **−m**			−wa−k	−wa−n_1	−wa−n_2
3p	−nan−k	−nan−k	−wa−k		−wa−n_1	−wa−n_2

(5) *Vocabulary Items*

−nan ⇔ +1,+pl /___[A, +3]
−men ⇔ +1,+pl
−k ⇔ +3,+pl
−n_1 ⇔ +obv
−n_2 ⇔ −anim,+pl
−m ⇔ +2,+pl

Theoretical Implementation for blocking: Impoverishment Rules?

- prior to insertion, the morpho-syntactic features can be manipulated: features can be deleted in the presence of other features

(Bonet 1991, Halle & Marantz 1993, Bonet 1995, Noyer 1997, Halle 1997)

Theoretical Implementation for blocking: Impoverishment Rules?

(6) Impoverishment rules in Potawatomi

a. +pl ⇒ ∅ /__[A,+1,+pl]
b. +obv ⇒ ∅ /__[A,+1,+pl]
c. −anim ⇒ ∅ /__[A,+1,+pl]
d. +pl ⇒ ∅ /__[P,+1,+pl]

} $Agr_P \Rightarrow \varnothing$

	1p	2p	3p	obv	−anim
1p		−men* **−m** [+2,+pl]	−men* **−k** [+3,+pl]	−men* **−n** [+obv]	−men* **−n** [−anim]
2p	−men* **−m** [+2,+pl]				

But...

...isn‘t the distribution of the blocking quite striking?

➽ it can always be found in the presence of the marker *–men*?

A \P	1pe	1pi	2p	3p	obv	–anim p
1p			–men	–men	–men	–men
2p	–men			–wa–k	–wa–n_1	–wa–n_2
3p	–nan–k	–nan–k	–wa–k		–wa–n_1	–wa–n_2

- two markers for [+1,+pl]: *–nan* and *–men*
- the blocking effect is marker specific and bound to *–men*

Our main Claim

- the blocking is a true instance of **marker-sensitive blocking**
- impoverishment rules are a powerful and rather stipulated mechanism and it is impossible to restrict their application to the **presence of a preceding marker**

➽ Morphological deletion can follow from marker insertion. Markers themselves can be responsible for the blocking of other markers:

1. markers that *do not* trigger blocking
2. markers that *do* trigger blocking

Markers with a CFD-property

- markers can be marked for **Collateral Feature Discharge**
- they discharge more than the features which are necessary for their insertion
- they are potential **triggers for blocking** since certain features are unaccessible for further insertion

Collateral feature Discharge in Potawatomi

head:	insertion of:	resulting structure:
$\begin{bmatrix} \text{A},+1,-2,-3,+\text{pl} \\ \text{P},-1,-2,+3,+\text{pl} \end{bmatrix}$	*-men*$_{cfd} \leftrightarrow [+1,+\text{pl}]$	$\begin{bmatrix} \cancel{\text{A},+1,-2,-3,+\text{pl}} \\ \cancel{\text{P},-1,-2,+3,+\text{pl}} \end{bmatrix}$

$$\begin{bmatrix} \text{A},+1,-2,-3,+\text{pl} \\ \text{P},-1,-2,+3,+\text{pl} \end{bmatrix}$$

–men

CFDs in Potawatomi...

...allow to capture the **marker-sensitivity** of the blocking.

- its the presence of *–men* rather than the context [+1,+pl] that triggers blocking
  - *–nan* is followed by other markers
  - only potentially subsequent markers can be blocked (=feature discharge through insertion)

...and replace impoverishment rules.

- 4 different rules would be needed to account for all contexts where *–men* appears that would always delete different morphosyntactic features

➽ a broader view on Algonquian languages strongly supports this view

Blocking – Cross Algonquian

- etymologically two sets of plural suffixes for first and second person with a special status (Goddard 1967, Proulx 1984, Goddard 2007)

$$*\text{hmena} / *\text{hmwa} \Rightarrow \text{hm-plurals}$$

$$*\text{ena:n} / *\text{wa:w} \Rightarrow \text{n-plurals}$$

- distribution of these varies across Algonquian $\sim$ 3 patterns
- distribution of blocking varies $\sim$ 3 patterns

➽ and both patterns coincide non accidentally

Type I: Fox (Bloomfield, 1925)

	*hm	n
1p	**–pena**	–na:n
2p	**–pwa**	–wa:

Fox: the direct paradigm

direct

A\P	3s	3p
1s	–wa	–wa–gi
2s	–wa	–wa–gi
3s	–wa	–wa–gi
1p	**–pena**	
2p	**–pwa**	
3p	–wa–gi	–wa–gi

- **–pena**/**–pwa** in 1p and 2p
- no subsequent marker (for the 3.P argument)

intransitive

1s	–∅
2s	–∅
3s	–wa
1p	–pena
2p	–pwa
3p	–wa–gi

direct

3s (P)	3p (P)
–wa	–wa–gi
–wa	–wa–gi
–wa	–wa–gi
–pena	
–pwa	
–wa–gi	–wa–gi

inverse

3s (A)	3p (A)
–wa	–wa–gi
–wa	–wa–gi
–wa	–wa–gi
–na:n–wa	–na:n–wa–gi
–wa:–wa	–wa:–wa–gi
–wa–gi	–wa–gi

local

A\P	1s	1p	2p
1s			**–pwa**
1p			**–pena**
2p	**–pwa**	**–pena**	

Summary of type I (Fox)

- *hm suffixes in all 1p and 2p forms in direct and local
- n suffixes in the inverse forms

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
I	**pena**	**pwa**	**pena**	**pwa**	na:n	wa:

- blocking in 1p and 2p direct cells and all local forms
- no blocking in inverse

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
I						

Type II: Shawnee (Goddard, 1967)

	*hm	n
1p	**–pe**	–na:
2p	**–pwa**	–wa:

intransitive

1s	–∅
2s	–∅
3s	–∅
1p	–pe
2p	–pwa
3p	–ki

direct

3s (P)	3p (P)
–∅	–ki
–∅	–ki
–∅	–hi
–pe	
–wa:	–wa:–ki
–wa:–li	–wa–hi

inverse

3s (A)	3p (A)
–∅	–ki
–∅	–ki
–li	–hi
–na:	–na:–ki
–wa	–wa:–ki
–wa:–li	–wa–hi

local

A\P	1s	1p	2p
1s			**–pwa**
1p			**–pe**
2p	**–pwa**	**–pe**	

Summary of type II (Shawnee)

- *hm suffixes only in 1p direct and in local forms
- n suffixes in all inverse contexts and in 2p local

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
II	**pe**	**pwa**	**pe**	wa:	na:	wa:

- blocking in local and 1p direct cells
- 2p local and inverse cells show no blocking

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
II						

Type III: Eastern Ojibwa (Hockett, 1958)

	*hm	n
1p	**–min**	–na:n
2p	**–m**	–wa:

intransitive

1s	–∅
2s	–∅
3s	–∅
1p	–min
2p	–m
3p	–ag

direct

3s (P)	3p (P)
–∅	–ag
–∅	–ag
–an	–an
–na:n	–na:n–ag
–wa:	–wa:–ag
–wa:–an	–wa:–an

inverse

3s (A)	3p (A)
–∅	–ag
–∅	–ag
–∅	–ag
–na:n	–na:n–ag
–wa:	–wa:–ag
–an	–wa–an

local

A\P	1s	1p	2p
1s			**–m**
1p			**–min**
2p	**–m**	**–min**	

Summary of type III (Eastern Ojibwa)

- *hm suffixes only in local forms
- direct and inverse use n suffixes

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
III	**min**	**m**	na:n	wa:	na:n	wa:

- blocking only in local forms
- direct and inverse cells show regular agreement

	local		direct		inverse	
	1p	2p	1p ⇒3	2p ⇒3	3 ⇒1p	3 ⇒2p
III						

Overview

		Transitive Animate paradigms					
		local		direct		inverse	
		1p	2p	1p	2p	1p	2p
I	Fox	-pena	-pwa	-pena	-pwa	-ena:n	-wa
	Abenaki	-bena	-ba	-bena	-ba	-nna	-wo
II	Miami-Illinois	-mena	-mwa	-mena	-wa	-ena:n	-wa
	Shawnee	-pe	-pwa	-pe	-wa	-na	-wa
	Potawatomi	-mən	-m	-mən	-wa	-nan	-wa
III	Ojibwe	-min	-m	-na:n	-wa:	-na:n	-wa:
	Delaware	-hVma	-hVna	-na:n	-wa:w	-na:n	-wa:w
	Cheyenne	-meno	-me	-one	-ovo	-one	-ovo
	Passamaquoddy	-pən	-pa	-nen	-wa(w)	-nen	-wa(w)

*hm shows up as p, b, m, and h here

Summary of the findings

- 3 different distributions of the *hm plural forms in the Algonquian languages
- the distribution of morphological blocking in the languages (=single agreement) correlates with the different distribution of these suffixes
- a straightforward prediction if the former *hm suffixes are CFDs: their distribution varies and the blocking as well since it is a **marker-inherent property**

Predictions for language development

- different distributions of the CFD marker yield different distributions of the blocking effect
- when a CFD marker is lost in language development, the blocking effect can disappear as well

Miami-Illinois: Costa 2003

	2p	3s	3p
2p		–mwa *–mwa*	–ewa–ki *–mwa*
3s	–ewa		
3p	–ewa–ki		

Goddard 1967

Conclusion

- it was argued that there exists a pattern of **marker-sensitive blocking** in Algonquian:
  - different distributions of a CFD marker = different distributions of morphological blocking
- we extended a standard DM-version assuming insertion as feature discharge with the concept of **Collateral Feature Discharge** to derive this pattern in a formal analysis
  - since features are discharged if a marker is inserted, it follows straightforwardly that only insertion of *subsequent* markers can be influenced

References I

Anderson, Stephen R. (1992), *A-Morphous Morphology*, Cambridge: Cambridge University Press.

Bloomfield, Leonard (1925), Notes on the Fox language, *International Journal of American Linguistics*, 3:219-232.

Bonet, Eulalia (1991), *Morphology after syntax – Pronominal clitics in Romance*. PhD thesis, Massachusetts Institute of Technology.

Bonet, Eulalia (1995), Feature structure of romance clitics. *Natural Language and Linguistic Theory*, 13:607-647.

Costa, David (2003), *The Miami-Illinois Language*, University of Nebraska Press.

Goddard, Ives (1967), The Algonquian independent indicative, in *Contributions to anthroplogy: Linguistics I (Algonquian)*, National Museum of Canada.

Goddard, Ives (2007), Reconstruction and history of the independent indicative, in H.Wolfart, ed., *Papers of the Thirty-Eighth Algonquian Conference*.

Halle, Morris and Alec Marantz (1993), Distributed Morphology and the pieces of inflection. In K. Hale and S. J. Keyser, editors, *The View from Building 20*, pp. 111-176. Cambridge MA: MIT Press.

Halle, Morris (1997), Distributed Morphology: Impoverishment and fission. In Y. K. Benjamin Bruening and M. McGinnis, editors, *Papers at the Interface*, volume 30 of *MIT Working Papers in Linguistics*, pp. 425-449. Cambridge MA: MITWPL.

Hockett, Charles F. (1939), *The Potawatomi language. A descriptive grammar*. PhD thesis, Yale University.

Hockett, Charles F. (1948) Potawatomi I: Phonemics, morphophonemics, and morphological survey. *International Journal of American Linguistics*, 14(1):1-10.

References II

Hockett, Charles F. (1958), *Eastern Ojibwa Grammar, Texts and Word Lists*.
Müller, Gereon (2005), Global impoverishment in Sierra Popoluca. Ms., University of Leipzig.

Noyer, Rolf (1997), *Features, Positions and Affixes in Autonomous Morphological Structure*. Garland Publishing, New York, revised version of 1992 MIT doctoral dissertation edition.

Proulx, Paul (1984), Algonquian objective verbs, *International Journal of American Linguistics* 50:403-423.
Steele, Susan (1995), Towards a theory of morphological information, *Language* 71:260-309.
Stump, Gregory (2001), *Inflectional Morphology*. Cambridge: Cambridge University Press.

Wunderlich, Dieter (1996), A minimalist model of inflectional morphology, in C.Wilder, M.Bierwisch and H.- M.Gärtner, eds, *The role of economy principles in linguistic theory*, Berlin: Akademie-Verlag, pp. 267-298.